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**AFOSR-TR. 88-1315**

TITLE: Funding of High-Temperature Furnace to Enable  
Determination of High Temperature Mechanical  
Properties of Structural Carbon Materials

AUTHOR, ORGANIZATION, ADDRESS: Maurice A. Wright, Director  
Materials Technology Center  
Southern Illinois University at Carbondale  
Carbondale, IL 62901-4303

DATE: 13 October 1988

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**FINAL REPORT**  
**for AFOSR on Proposal for Funding to Purchase a High Temperature Furnace**  
**to Enable Determination of the High Temperature Mechanical**  
**Properties of Structural Carbon Materials**

This report documents the purchase of a controlled environment furnace, designed for attachment to the MTS and Instron tensile testing machines used by the researchers of the Materials Technology Center at Southern Illinois University at Carbondale. After investigating proper sources for the equipment, a purchase requisition was processed on December 7, 1987 through university procedures and Board of Trustees

approval for the following:

Centorr Model PT-4x10-G-G-D6A4-A-27 high temperature  
vacuum and controlled atmosphere multi-purpose front  
loading graphite hot zone furnace, completely assembled  
and tested  
75 KVA 480/3/60 Power Supply  
Sensor: 3 Phase Power Transducer, Ircon Modline 11 220A Infrared  
Pyrometer with 1500°C temperature range and mount, and  
PT/PYR Automatic Selector Switch with manual override  
Honeywell DCP-700 2-channel programmer-controller  
Honeywell 111 single pen-strip chart recorder  
Leybold-Heraeus Model D16A (14.1 CFM) Direct Drive (Rotary Vane)  
Mechanical Pump with #AFB-16A exhaust filter  
Electro-pneumatic vacuum valve

TOTAL ACQUISITION COST.....\$83,950.00

Funded by: AFOSR-87-0397.....\$64,976.00  
Southern Illinois University  
contributing funds \$18,974.00

Furnished by: Centorr Associates  
Route 28  
Suncook, NH 03275

The Furnace was delivered to Technology Building B, Room 124, at the Southern Illinois University at Carbondale Campus on September 15, 1988. A General Improvements Request has been processed through the campus Physical Plant for modifications to existing facilities to adapt the laboratory for the high temperature vacuum, controlled atmosphere,

furnace for utility requirement changes of electrical, and compressed air upgrading. As soon as the Physical Plant provides the cost estimate for the laboratory room modifications, it is estimated that after funding has been arranged that the upgrading work will be completed within one month. It is expected that the furnace will be in operation in early January, 1989, and research for the benefit of the principal investigators outlined in the grant proposal can begin.

Any publications, resulting from the use of the furnace will bear the citation of funding by AFOSR, one copy of each manuscript or abstract will be submitted to AFOSR, and six reprints of any published paper will be also furnished as outlined in the report specifications. The following citation will appear on each document:

Research sponsored by the Air Force Office of Scientific Research, Air Force Systems Command, USAF, under grant or cooperative agreement number AFOSR-87-0397. The US Government is authorized to reproduce and distribute reprints for Governmental purposes notwithstanding any copyright notation thereon.

This manuscript is submitted for publication with the understanding that the US Government is authorized to reproduce and distribute reprints for Governmental purposes.

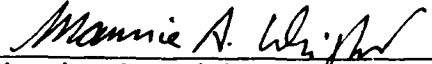
News releases, interviews, and other public statements about research sponsored by AFOSR will acknowledge AFOSR, Air Force Systems Command, USAF as the supporting agency.

No research has been conducted on the equipment, no publications resulting from its use, no patents or new discoveries, and no principal investigators have used the equipment during the period of this final report.

Title to the furnace vests in Southern Illinois University at Carbondale who agrees that no charge will be made to the Government for any depreciation,

amortization or use charge with respect to such other items under any existing or future Government grant or contract. The furnace will bear a State of Illinois Property Control Inventory number for accurate recording listing serial number, etc. The Final Fiscal Report will be reported by the Office of Research and Projects Fiscal Management of Southern Illinois University at Carbondale.

Submitted by:

  
Maurice A. Wright, Director  
Materials Technology Center  
Southern Illinois University at Carbondale  
Carbondale, IL 62901-4303

Date: 13 October 1988